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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,230	02/25/2004	Tadamitsu Kishimoto	046124-5042-01	1453

9629 7590 08/05/2009

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EXAMINER	
GODDARD, LAURA B	
ART UNIT	PAPER NUMBER
1642	
MAIL DATE	DELIVERY MODE
08/05/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/785,230	KISHIMOTO ET AL.	
	Examiner	Art Unit	
	LAURA B. GODDARD	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *25,26 and 28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25,26 and 28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/646,785.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/22/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The Amendment filed April 8, 2009 in response to the Office Action of January 8, 2009, is acknowledged and has been entered. Previously pending claims 25, 26, and 28 are currently pending and being examined. No claims were amended.

New Rejection

(based on new considerations)

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 25, 26, and 28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a WRITTEN DESCRIPTION rejection.

The claims are drawn to a method for treating a solid tumor comprising administering a substance that inhibits human CXCR4 to a human subject expressing CXCR4 in need thereof, wherein the substance inhibits binding between the human ligand SDF-1 and the human receptor CXCR4, wherein the substance is selected from the group consisting of: i) an anti-human CXCR4 antibody or ii) an anti-human SDF-1

antibody (claim 25), a method for treating a disease pathologically caused by neovascularization comprising administering a substance that inhibits human CXCR4 to a human subject expressing CXCR4 in need thereof, wherein the substance inhibits binding between the human ligand SDF-1 and the human receptor CXCR4, wherein the substance is selected from the group consisting of: i) an anti-human CXCR4 antibody or ii) an anti-human SDF-1 antibody (claim 26), a method for suppressing vascularization comprising administering a substance that inhibits human CXCR4 to a human subject expressing CXCR4 in need thereof, wherein the substance inhibits binding between the human ligand SDF-1 and the human receptor CXCR4, wherein the substance is selected from the group consisting of: i) an anti-human CXCR4 antibody or ii) an anti-human SDF-1 antibody (claim 28).

The specification discloses that the structures of the receptor CXCR4 and its chemokine SDF-1 are known (p. 3-4; p. 14-16). The specification discloses that CXCR4 or SDF-1 knock-out mice show defective formation of the large vessel being supplied to the gastrointestinal tract (p. 4; p. 46-54). The specification contemplates using substances to inhibit CXCR4 or SDF-1 for use in the treatment of diseases involving neovascularization (p. 5; p. 16-17). The specification contemplates antagonists such including an anti-SDF-1 antibody or anti-CXCR4 antibody (p. 17-18). The specification contemplates that vascularization inhibition will also have an antitumor effect as well as therapeutic effects on diseases pathologically caused by neovascularization (p. 38). The specification does not disclose any anti-human CXCR4 antibodies or anti-human SDF-1 antibodies that function to inhibit the binding between the human ligand SDF-1 and the

human receptor CXCR4 and to treat a solid tumor, treat a disease pathologically caused by neovascularization, or suppress vascularization as broadly encompassed in the claims.

The art (see Volin et al, Biochemical and Biophysical Research Communications, January 1998, 242:46-53, IDS; and Doranz et al, J Exp Med, October 1997, 186:1395-1400, IDS) teaches monoclonal antibody 12G5 that binds CXCR4 (see Volin et al, p. 48; Figure 5; and see Doranz et al, p. 1397, col. 2, bottom; p. 1398, col. 1), however antibody 12G5 that binds CXCR4 does not provide an adequate representative number of species to support adequate written description for the broad genus of anti-human CXCR4 antibodies or anti-human SDF-1 antibodies that function to inhibit the binding between the human ligand SDF-1 and the human receptor CXCR4 and treat a solid tumor, treat a disease pathologically caused by neovascularization, or suppress vascularization as encompassed by the claims.

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In this case, the only factor present in the claim is a recitation of "treating a solid tumor," "treating a disease pathologically caused by neovascularization," or "suppressing vascularization," "anti-human CXCR4 antibody", "inhibits the binding between the human ligand SDF-1 and the human receptor CXCR4,"

"anti-human SDF-1 antibody". Accordingly, in the absence of sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the claimed genus.

Although drawn to DNA arts, the findings in University of California v. Eli Lilly and Co., 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997) and Enzo Biochem, Inc. V. Gen-Probe Inc. are relevant to the instant claims. The Federal Circuit addressed the application of the written description requirement to DNA-related inventions in University of California v. Eli Lilly and Co., 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997). The court stated that " [a] written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definition, such as by structure, formula, [or] chemical name', of the claimed subject matter sufficient to distinguish it from other materials. " Id. At 1567, 43 USPQ2d at 1405. The court also stated that:

> a generic statement such as "vertebrate insulin cDNA" or "mammalian insulin cDNA" without more, is not an adequate written description of the genus because it does not distinguish the genus from others, except by function. It does not specifically define any of the genes that fall within its definition. It does not define any structural features commonly possessed by members of the genus that distinguish them from others. One skilled in the art therefore cannot, as one can do with a fully described genus, visualize or recognize the identity of the members of the genus. A definition by function, as we have previously indicated, does not suffice to define the genus because it is only an indication of what the gene does, rather than what it is.

Id. At 1568, 43 USPQ2d at 1406. The court concluded that "naming a type of material generally known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material." Id.

Finally, the court addressed the manner by which a genus of cDNAs might be described. "A description of a genus of cDNAs may be achieved by means of a recitation of a representative number of cDNAs, defined by nucleotide sequence, falling within the scope of the genus or of a recitation of structural features common to the members of the genus, which features constitute a substantial portion of the genus." Id.

The Federal Circuit has recently clarified that a DNA molecule can be adequately described without disclosing its complete structure. See Enzo Biochem, Inc. V. Gen-Probe Inc., 296 F.3d 1316, 63 USPQ2d 1609 (Fed. Cir. 2002). The Enzo court adopted the standard that "the written description requirement can be met by show[ing] that an invention is complete by disclosure of sufficiently detailed, relevant identifying characteristics ....i.e., complete or partial structure, other physical and/or chemical properties, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics." Id. At 1324, 63 USPQ2d at 1613 (emphasis omitted, bracketed material in original).

The inventions at issue in Lilly and Enzo were DNA constructs per se, the holdings of those cases are also applicable to claims such as those at issue here. A disclosure that does not adequately describe a product itself logically cannot adequately describe a method of using that product.

Thus, the instant specification may provide an adequate written description of anti-human CXCR4 antibodies or anti-human SDF-1 antibodies that function to inhibit the binding between the human ligand SDF-1 and the human receptor CXCR4 and treat a solid tumor, treat a disease pathologically caused by neovascularization, or suppress vascularization, per Lilly by structurally describing representative antibodies that function as claimed or by describing "structural features common to the members of the genus, which features constitute a substantial portion of the genus." Alternatively, per Enzo, the specification can show that the claimed invention is complete "by disclosure of sufficiently detailed, relevant identifying characteristics, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics."

In this case, the specification does not directly describe anti-human CXCR4 antibodies or anti-human SDF-1 antibodies that function to inhibit the binding between the human ligand SDF-1 and the human receptor CXCR4 and treat a solid tumor, treat a disease pathologically caused by neovascularization, or suppress vascularization useful in the claimed invention in a manner that satisfies either the Lilly or Enzo standards. Although the specification discloses the structures of CXCR4 and SDF-1 are known, this does not provide a description of the broadly claimed anti-human CXCR4 antibodies or anti-human SDF-1 antibodies that function to inhibit the binding between the human ligand SDF-1 and the human receptor CXCR4 and treat a solid tumor, treat a disease pathologically caused by neovascularization, or suppress vascularization that

would satisfy the standard set out in Enzo because the specification provides no structural features coupled to functional characteristics.

Further, the specification also fails to describe anti-human CXCR4 antibodies or anti-human SDF-1 antibodies that function to inhibit the binding between the human ligand SDF-1 and the human receptor CXCR4 and treat a solid tumor, treat a disease pathologically caused by neovascularization, or suppress vascularization by the test set out in Lilly because the specification describes only the structures of CXCR4 and SDF-1 and no antibodies that function as claimed. Therefore it necessarily fails to describe a representative number of such species.

Thus, the specification does not provide an adequate written description of anti-human CXCR4 antibodies or anti-human SDF-1 antibodies that function to inhibit the binding between the human ligand SDF-1 and the human receptor CXCR4 and treat a solid tumor, treat a disease pathologically caused by neovascularization, or suppress vascularization that is required to practice the claimed invention. Since the specification fails to adequately describe the product to which the claimed method uses, it also fails to adequately describe the method.

Finally, the decision in *In re Alonso* (p. 1-11, submitted for Applicants' convenience) is relevant to the instant claims. In *In re Alonso,* the claims recite a method of treating neurofibrosarcoma in a human comprising administering a genus of monoclonal antibodies that are idiotypic to neurofibrosarcoma of the human, wherein the monoclonal antibodies are secreted from a human-human hybridoma derived from the neurofibrosarcoma cells. The specification discloses methods for screening for

antibodies that are reactive to neurofibrosarcoma cells, however, the specification only exemplifies the production of a single hybridoma HB983 that produces an antibody that functions as claimed. It was concluded that the specification did not provide sufficient support for the broad genus of therapeutic antibodies and one of skill in the art would not conclude that the Applicant was in possession of the claimed genus of compounds. It was further concluded that for purposes of written description, it is not enough to merely disclose the method of making and identifying compounds capable of being used to practice the claimed invention. Disclosure of the single antibody in the specification is insufficiently representative to provide adequate written descriptive support for the genus of antibodies required to practice the claimed invention.

Similarly, the instant application does not provide sufficient support for the broad genus of anti-human CXCR4 antibodies or anti-human SDF-1 antibodies that function to inhibit the binding between the human ligand SDF-1 and the human receptor CXCR4 and treat a solid tumor, treat a disease pathologically caused by neovascularization, or suppress vascularization by simply describing proteins CXCR4 and SDF-1 and contemplating antibodies that would function as claimed, therefore one of skill in the art would not conclude that Applicants are in possession of the genus of antibodies that function as claimed.

3. All other rejections recited in the Office Action mailed January 8, 2009 are hereby withdrawn in view of arguments. Applicants' arguments are not drawn to the new rejection above.

4. **Conclusion:** No claim is allowed.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAURA B. GODDARD whose telephone number is (571)272-8788. The examiner can normally be reached on 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Helms can be reached on 571-272-0832. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Laura B Goddard/
Primary Examiner, Art Unit 1642